LABEL MAKER AND METHOD

RELATED APPLICATIONS

5   This application claims the benefit of U.S. provisional application No. 60/157,277, filed on October 1, 1999 and of U.S. provisional application No. 60/178,036, filed on January 24, 2000.

10   BACKGROUND OF THE INVENTION

1.   Field of the Invention

      This invention relates to a label maker and a method
15 for making labels.

2.   Description of the Prior Art

      Label making apparatus has used computers to form
20 labels for addresses as well as for labeling files and articles. For example, word processing programs generally include a label making utility that allows address information or other content to be printed on a selected label blank or on all label blanks of a label stock.

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      An example of a computer system that can make a series of labels with each label in the series being ordered in a numerical sequence is described in U.S. Patent No. 4,939,674. This computer system makes a series of labels,
30 in which each label has a plurality of character positions. A number is assigned to some of the positions. The digits of the numbers are color coded so that a color assigned to

a specific digit is always that color in the series of labels. The numbers of the labels in the series are an ordered sequence that, for example, increments by one, two or another amount from label to label. A drawback of this computer system is that it is limited to producing a series of related labels and is not suitable for performing a job that requires different types of labels to be formed and printed. Another drawback is that the computer system does not provide a display of a label to the user before printing. A further drawback is that the computer system has limited capabilities for printing and color assignment.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a computer that can make a plurality of labels that have unrelated characteristics or attributes in a single job.

Another object of the present invention is to provide a computer that has a versatility to make a plurality of labels that have either related numbers, unrelated numbers or both in a single job.

A further object of the present invention is to provide a label making system with a label inventory managing capability.

A still further object of the present invention is to provide a method that achieves the foregoing objects.

The foregoing and other objects of the present invention are achieved by the method of the present

invention that forms a plurality of labels that each have a plurality of character positions. The method uses a computer that responds to entries of a user from an input device, such as a keyboard, a mouse or other device. In response to an entry of content, such as alphabetic or numeric characters, for one or more positions of a label, a label with alphanumeric content is defined. Succeeding entries define the alphanumeric content for the other labels such that at least one of the labels is unrelated in numerical sequence to any of the other labels in the job. The labels so formed are then printed.

Another aspect of the invention assigns an attribute scheme, for example, a foreground color, a background color, a font type, a font size, a font style, shape and/or other attributes to one or more of the character positions of the labels in a job in which the labels may or may not be related in numeric sequence. Still another aspect of the invention manipulates a machine readable code, such as a bar code, by either suppressing it, identifying its location relative to the character positions or rotating the elements of the code for a reading in either a first direction or a second opposed direction. Yet another aspect of the invention permits the characters to be suppressed so that only the bar code is printed.

A further aspect of the invention responds to user entries to establish print conditions with respect to a label stock that contains an array of label blanks. One of the print conditions is the starting label blank, which can be any blank on the label stock. Another print condition

is order of printing, either serial by row or serial by column.

Another aspect of the present invention is to save the data of an ordered sequence of labels of a current job so that the labels of a future job can continue in the same ordered sequence where the current job ended.

A further aspect of the present invention provides a label meter that keeps track of a label inventory and alerts a user when the inventory is low.

The computer of the present invention includes a label making program and/or a label meter program that cause the computer to perform the methods of the invention.

BRIEF DESCRIPTION OF THE DRAWING

Other and further objects, advantages and features of the present invention will be understood by reference to the following specification in conjunction with the accompanying drawings, in which like reference characters denote like elements of structure and:

FIG. 1 is a block diagram of a networked system that includes the label system of the present invention;

FIG. 2 is a block diagram of the label system of FIG. 1;

FIG. 3 depicts a label with a positional attribute scheme;

FIG. 4 depicts a label with a horizontal orientation;

FIG. 5 depicts a label with a suppressed bar code;

FIG. 6 is a display screen used for an ad hoc job by the label system of FIG. 1;

FIG. 7 is an expansion of the display screen of FIG. 6;

FIG. 8 is a display screen used for a serial job by the label system of FIG. 1;

FIG. 9 is a display screen used for a positional palette;

FIG. 10 is a display screen used for printing labels;

FIGS. 11 through 17 are flow diagrams of the label making program of the label system of FIGS. 1 and 2;

FIG. 18 is a label meter display screen for the label meter program of the label making system of FIGS. 1 and 2; and

FIG. 19 is a flow diagram of the label meter program of the label making system of FIGS. 1 and 2.

DESCRIPTION OF THE INVENTION

With reference to FIG. 1, there is provided a label system generally represented by numeral 30. Label system 30 communicates via a network 34 with a vendor computer 36. Vendor computer 36 may provide various services to label

5   system 30. For example, vendor computer 36 may provide via an e-commerce procedure software sales, downloading, updating, announcements, label stock sales and the like. Network 34 may be the Internet, the World Wide Web, a telephone network, other networks or a combination thereof.

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Label system 30 includes a computer 38, a computer bus 40, a keyboard 42, a mouse 44, a display 46, a bar code reader 48, a printer 50 and a communication module 52. Computer bus 40 interconnects computer 38 with keyboard 42,

15   mouse 44, display 46, bar code reader 48, printer 50 and communication module 52. Communication module 52 sends and receives messages via network 34 to and from vendor computer 36 or other devices. Keyboard 44, mouse 44 and bar code reader 48 are input devices that can be used by a

20   user to make entries to specify label jobs for label system 30. It will be apparent to those skilled in the art that other input devices can be used.

Referring to FIG. 2, computer 38 includes a processor

25   54 and a memory 56. Memory 56 has stored therein an operating system 58, utilities 60, a label program 300 and a label meter program 500. Operating system 58 controls processor 54 to perform various operations through the use of utilities 60. Thus, utilities 60 include print, display

30   and other utilities. Label program 300 uses operating system 58 and utilities 60 to control label making system 30 to make and print labels based on entries made by a user

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via keyboard 42, mouse 44, bar code reader 48 or other
input devices. Label meter program 500 uses operating
system 58 and utilities 60 to control label making system
30 to keep track of labels used, refill labels ordered,

5   refill labels received so as to maintain an adequate label
inventory and prevent execution of printing jobs when the
inventory is inadequate.

Software, such as operating system 58, utilities 60,

10   label program 300 and label meter program 500, can be
installed to memory 56 from a memory medium 62. This
software may be read from memory medium 62 by a memory
device associated with computer 38 or by a memory device
associated with another computer, such as vendor computer

15   36 and downloaded to computer 38 via network 34.

Referring to FIG. 3, a label 64 has a plurality of
character positions 66, 68, 70, 72, 74 and 76 that have a
vertical alignment, in which the characters are read

20   vertically. A bar code 78 is located to the right of
character positions 66, 68, 70, 72, 74 and 76. According
to an aspect of the invention, a positional attribute
scheme or palette is assigned to character positions 66, 68
and 70. Character positions 66, 68 and 70 each may have

25   the same or different positional palettes. For all labels
created with the positional palette, the assigned
attributes of character positions 66, 68 and 70 will be the
same independent of the value of any alphabetic or numeric
character contained therein. Character positions 66, 68

30   and 70 may be, for example, a prefix. A label indicator
77, shown as "d", is located in character position 74.

Bar code 78 has a plurality of elements 79 that are arranged for reading in a particular direction, for example, from top to bottom. According to an aspect of this invention, the reading direction may be rotated by 5   180° for reading from bottom to top.

Referring to FIG. 4, a label 80 has a plurality of character positions 82 aligned horizontally, in which the characters are read from left to right. A bar code 84 is 10 located below character positions 82.

Referring to FIG. 5, a label 86 includes a plurality of character positions 88. Label 86 has no bar code. According to an aspect of this invention, generation of a 15 bar code can be suppressed. It will be apparent to those skilled in the art that bar codes 78 and 84 are by way of example, and that other machine readable codes may be used.

Referring to FIG. 6, a display screen 90 is presented 20 on display 46 when a user selects an ad hoc job for creating labels. An ad hoc job includes a variety of different labels that may or may not be related. For instance, an ad hoc job may include replacement labels for an existing set of labels. Some of these labels will bear 25 no ordered sequential relation to other labels in the job. However, the ad hoc job is versatile enough to include a group of labels that have an ordered sequence.

Display screen 90 includes various user entry areas. 30 A job name 92 is for entry of a name for the job. A job attributes 94 is for entry of a positional palette 98 or a character palette 100. These palettes may be selected from
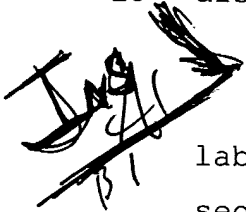
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a repertoire of positional palettes or of character palettes. Alternatively, these palettes may be created from another menu (not shown) that permits selection of background and/or foreground color. A label template 96 is

5   for entry of a label template. Label template 96 describes the label stock sheet along with attributes not controlled by the user that are unique to a particular label type. An example of such an attribute is the percentage of label height occupied by a bar code. A label indicator 102 is

10 for entry of a label indicator and an indicator position 104 is for the location of the indicator. Label indicator 102 and indicator position 104 are used to place a special character or characters in the bar code portion of the label. These special characters are not visible.

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A suppress bar code 106 is for suppression of the bar code and a suppress character 108 is for suppression of the characters. A bar code orientation 110 is for identifying the location of the bar code relative to the character

20 positions, for example, to the right or left, above or below. A rotate bar code 112 is for reversal of bar code elements. A check character 114 is for addition of a check character to the bar code. An add button is for adding labels. Labels may be added by importing or by creating.

25 Labels may be imported from an existing data file. These labels may be from a preexisting job or may be created by reading the bar codes of a set of labels with bar code reader 48.

30 Referring to FIG. 7, a display screen 120 is presented if the labels are to be created. Display screen 120 includes display screen 90 and a lower portion 122. Lower

portion 122 permits entry of the alphanumeric content of the labels of the job, one label at a time. To this end, a label attributes section 126 permits entry of the label content at 128 and changes in the positional palette at 134

5   or in the character palette at 136 that were previously selected via display screen 90. That is, the positional and character palettes selected via display screen 90 are used for all labels to be created, unless the user makes changes at 134 or 136. The alphanumeric content is entered

10   via a character position 130 and a character ID or content 132, one character position at a time. An area 128 displays the entered content of the label. As each label is completed, actuation of an add button 138 lists it in a display area 124. When the ad hoc job is finished, an OK

15   button 140 is actuated.

Referring to FIG. 8, if the user selects a serial job, a serial display screen 142 is presented. Serial display screen 142 includes a job name 144, a label template 146, a

20   bar code orientation 154, a rotate bar code 155, a label indicator 156, an indicator position 158, a bar code suppress 178, a characters suppress 180, a positional palette 174 and a character palette 176. Each has the same functionality as the like named entry areas of ad hoc

25   display screen 90 in FIGS. 6 and 7.

Serial display screen 142 also includes a number of labels 160 for entry of the number of labels in the serial sequence. A numerical sequence 162 includes an increment

30   164 and a decrement 166 to designate whether the sequence is ascending (increment) or descending (decrement) and an amount 168 to designate the amount of increment or

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decrement. For example, if increment is selected and the amount is 2, the increment is by twos. A continue sequence after printing 192 permits the user to instruct label program 300 to save a notation that when additional labels of the same series are needed in the future, they will start with the next number of the ordered sequence. A pad character 172 must be added as a filler in some labels. For example, three pad characters, "0" are added in the label A0001Z. Actuation of a generate button 188 causes label program 300 present to the content of the labels of the job in a display area 184. When the serial job entry is completed, an OK button 190 is actuated. This causes the labels of the job to be placed in a data file.

Referring to FIG. 9, a display screen 181 for the formation of a positional palette is shown. Display screen 181 includes a positional palette name area 183 for entry of the positional palette name. An attribute area 198 includes a plurality of entry areas to define the attributes of the positional palette. Attribute area 198 includes a position area 197 for identifying the current character position for which attributes are being defined. For the current character position, the foreground color is entered in a foreground color area 187 and the background color is entered in a background area 189. A font attributes area 199 includes a font name area 191 for entry of a desired font name, a font size area 193 for entry of a font size and a font style area 195 for entry of a font style, such as normal, bold, italics, underscore, and the like. A shape attributes area 201 includes a type area 203, a size area 205 and a color area 207. Shape attributes area 201 permits entry of a geometrical shape in

a character position. The shape, for example, may be a
circle, a triangle, a rectangle, a square or any other
shape. This shape is entered in type area 203. Size area
205 is for entry of the size of the shape, for example as a
5   percentage of the character position area. Color area 207
is for entry of the color of the shape. To identify the
character positions that the entered attributes are to
apply, a check is entered in the box adjacent its number in
a display area 185. If there is no check mark for a
10   position, that position can be defined by a character
palette. When the positional palette has been defined, an
OK button 196 is actuated.

Referring to FIG. 10, a display screen 200 for
15   printing entries is shown. Display screen 200 includes a
printer definition area 202, a print range area 204, a
starting point area 206 and a print orientation area 215.
Print range area 204 includes an all labels area 208 and a
selected labels area 210. If selected labels area 210 is
20   selected, a drop down box or other selection technique may
be used for identifying the selected labels. Starting
point area 206 includes a row area 212 and a column area
214 to identify the label blank on a label stock at which
printing is to begin. Print orientation area 215 includes
25   a row area 216 and a column area 218. If row area is
selected, printing proceeds serial by row of the label
stock. If column area 218 is selected, printing proceeds
serial by column of the label stock.

30   Referring to FIG. 11, label program 300 begins at step
302 with a determination of whether a job name has been
entered. If not, step 302 continues until a job name is

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entered.   When entered, step 304 determines if the job is
an ad hoc job.   If not, the job is serial and control
passes to a point 14 that is continued in FIG. 14.

5   If step 304 determines that the job is an ad hoc job,
step 308 determines if labels are to be imported.   If yes,
step 310 adds the imported labels to the job.   Step 312
then determines if more labels are in the job.   If not,
control passes to point 17 that is continued in FIG. 17.

10   If yes, step 308 is repeated.   If step 308 determines that
labels are to be imported, steps 310 and 312 are repeated.
When step 308 determines that no labels are to be imported,
step 314 presents ad hoc display screen 90 and waits for a
label template to be selected.

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When a label template has been selected, step 316
determines if a positional palette has been selected and,
if yes, sets the selected positional palette and control
passes to step 320.   If not, step 318 sets a default

20   positional palette.   Step 320 then determines if a
character palette has been selected and, if yes, sets the
selected character palette.   If not, step 322 sets a
default character palette.   Steps 320 or 322 pass control
to point 12 that is continued in FIG. 12.

25   Referring to FIG. 12, point 12 continues with step 324
that determines if the bar code is to be suppressed.   If
yes, step 326 sets bar code suppress and control passes to
step 328.   If not, step 328 determines if the characters

30   are to be suppressed.   If yes, step 330 sets characters
suppress and passes control to step 332.   If not, step 332
determines if a bar code orientation has been entered.   If

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yes, step 334 sets the selected orientation. If not, step 336 sets a default orientation. Step 338 then determines if the bar code is to be rotated. If so, step 340 sets rotate bar code. Step 342 then determines if a check character has been entered. If yes, step 343 sets the selected check character. After step 343 or if step 342 determines that a check character is not selected, control passes to point 13, which is continued in FIG. 13.

Referring to FIG. 13, point 13 continues with step 346 that determines if a label indicator has been entered. If not, control passes to step 356. If yes, step 348 sets label indicator. Step 350 then waits for entry of an indicator position. When entered the indicator position is set by step 352. Step 356 waits for actuation of add labels button 166 or add button 138. When either is actuated, step 358 presents a clear display screen 120. Step 356 waits for label content to be added. When label content has been entered, step 360 waits for entry of label content.

Step 362 determines if there is a change in positional palette for this label. If yes, step 364 sets the change and control passes to step 366. If step 362 determines there is no change, step 366 determines if there is a change in character palette for this label. If yes, step 368 sets the change and control passes to step 370. If step 366 determines there is no change, step 370 determines if add button 138 or OK button 140 has been actuated (FIG. 7). If add button 138 is actuated, steps 356 through 370 are repeated. If OK button 140 is actuated, control passes to point 17, which is continued in FIG. 17.

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Referring to FIG. 14, point 14 continues to step 380 that presents serial screen 142 (FIG. 8) and records a template selection. Step 382 records a prefix, if

5   selected. Step 384 records a suffix, if selected. Step 386 records the starting number for the ordered sequence. Step 388 determines if a label indicator has been entered. If not, control passes to step 392. If yes, step 390 sets label indicator and indicator position. Step 392

10   determines if the bar code is to be suppressed. If yes, step 394 sets bar code suppress and control passes to point 15, which is continued in FIG. 15. If not, step 396 determines if the characters are to be suppressed. If yes, step 398 sets characters suppress and control passes to

15   step 400. If not, step 400 determines if a bar code orientation has been entered. If yes, step 402 sets the selected orientation. If not, step 404 sets a default orientation. Step 406 then determines if the bar code is to be rotated. If so, step 408 sets rotate bar code.

20   Control from steps 406 and 408 passes to point 15, which continues in FIG. 15.

Referring to FIG. 15, point 15 continues to step 412 that determines if a check character has been entered. If

25   yes, step 414 sets the selected check character and control passes to step 416. If step 412 determines that no check character has been entered, step 416 determines if increment is set. If yes, step 418 records increment set. If not, step 420 records decrement set. Step 422 records

30   the amount of increment or decrement. Step 424 records the total label length. Step 426 determines if pad characters have been entered and, if yes, step 428 records the pad

characters. Control passes from steps 426 and 428 to a point 16 that is continued in FIG. 16.

Referring to FIG. 16, point 16 continues to step to step 430 that determines if a positional palette has been selected and, if not, records a default positional palette. If yes, step 432 records the selected positional palette. Step 434 determines if a character palette has been selected and, if not, records a default character palette. If yes, step 436 records the selected character palette. Step 438 determines if the ordered sequence is to be continued after printing. If so, step 440 records or sets continue the sequence. Step 442 waits for actuation of generate labels button 188 (FIG. 8). When generate labels button 188 has been actuated, step 444 forms a labels sequence file. Step 446 waits for actuation of OK button 190 (FIG. 8). When OK button 190 has been actuated, control passes to a point 17 that is continued in FIG. 17.

Referring to FIG. 17, point 17 continues at step 450 that presents print screen 200 of FIG. 10. Step 452 determines if all labels are selected. If not, step 454 determines if selected label area 210 is selected. If not, step 452 is repeated. If yes, step 456 presents a label selection box and records the labels by the user and control passes to step 458. If step 452 determines that all labels are selected, control passes to step 458. Step 458 determines if a print starting point has been entered. If yes, step 460 records the entered start point. If not, step 462 sets a default start point. Step 464 determines if printing is serial by row and, if yes records serial by row. If not, step 466 records serial by column. Step 468

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waits for actuation of OK button 216 and, when actuated, begins a print operation to print the labels of the label job.

5   Referring to FIG. 18, a label meter screen 220 has a current label count area 222 in which is presented the current count or number of labels in the user's label inventory. A request amount area 224 is for user entry of a refill order amount. An order button 226, when actuated

10   by the user, will start an order process with a label vendor, for example, vendor computer 36 of FIG. 1. A received amount area 228 is for user entry of a refill quantity of labels that have been received. A set warning level button 230, when actuated will present a dialog box

15   (not shown) for setting or adjusting a warning count that represents a low inventory level. Actuation of an OK button 232 will enter the refill quantity and any changes to the warning count into label meter program 500.

20   Referring to FIG. 19, label meter program 500 begins at step 502 that determines if the current label count is greater than the warning count. If yes, control passes to step 510. If no, step 504 presents label meter screen 502. Step 506 records any refill order entered and placed by

25   actuation of order button 226. Step 508 records any entry of a refill quantity that has been received. Step 510 checks if any labels have been used by any job since the last time program 500 has run. Step 512 updates the current label count with any refill labels received and any

30   labels used. Step 514 determines if a warning count change has been entered. If yes, step 516 updates the warning count and step 502 is repeated. If step 514 determines

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that there has been no change to the warning count, program 500 is exited.

Program 500 is run periodically either as a part of label program 300 or separately therefrom. In either event, if the number of labels of a job being created, exceeds the current label count, execution of the job will be prevented. The label meter program is advantageous as it serves as a reminder for the user to order refill labels and prevents execution of current jobs if the user's label inventory is inadequate for the job.

The present invention having been thus described with particular reference to the preferred forms thereof, it will be obvious that various changes and modifications may be made therein without departing from the spirit and scope of the present invention as defined in the appended claims.